NetBiter® Serial Server
User Manual

SIM-4186-001

Revision 1.40

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Revision List

Revision	Date	Author	Chapter	Description
1.00	03-03-02	JOAK		First released version
1.10	05-11-01	HACA		Update for Modbus support etc.
1.20	06-06-30	MASA		Update to new design structure
1.30	07-01-30	JOAK	1.3.3, 1.3.4	Update to new NetBiter hardware
1.40	07-10-02	CHDA	2.3.3	Added modem control lines as manual settings

Preface

The data and illustrations found in this document are not binding. We reserve the right to modify our products in line with our policy of continuous product development. The information in this document is subject to change without notice and should not be considered a commitment by IntelliCom Innovation AB. IntelliCom Innovation AB assumes no responsibility for any errors that may appear in this document.

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Warranty and support

To obtain fast and simple support for your NetBiter products, please use our Internet support service at http://www.intellicom.se/support. Here you will find the latest documentation, configuration utilities, drivers etc. You can also contact our support at support@intellicom.se.

Product return

If you experience any problems with a NetBiter device and wish to have it repaired or exchanged, you'll need to follow these steps:

- Obtain a Product Return Number, PRN, from http://www.intellicom.se/support.
  To get this number you'll need to provide some information about the problem you have, contact information etc.
- Print the "PRN Acknowledge side" and send it to IntelliCom together with the product. Make sure the PRN is visible on the outside of the package, and that the delivery is pre-paid, otherwise the delivery won't be accepted by IntelliCom. Also provide evidence of original purchase.
- If the faulty product is covered by the 12-month warranty IntelliCom will repair, or exchange, the unit and return it within three weeks. If the product is not covered by Warranty, IntelliCom will respond with a cost estimation for repairing the unit.

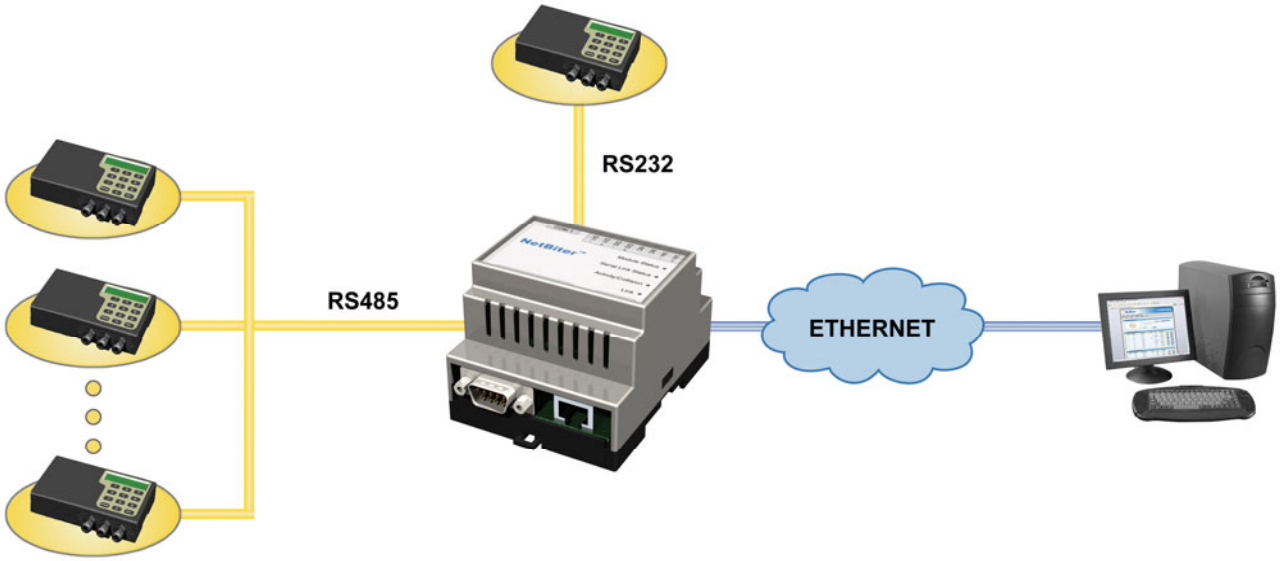
Terminology

Term	Extract	Description
TCP/IP	Transmission Control Protocol/ Internet Protocol	TCP (Transmission Control Protocol) is a set of rules used along with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet.
HTTP	Hyper Text Transfer Protocol	HTTP is a set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the Web.
SMTP	Simple Mail Transfer Protocol	SMTP is a TCP/IP protocol used in sending and receiving e-mail.
FTP	File Transfer Protocol	FTP is a standard Internet protocol that is used to exchange files between devices on the Internet.
Telnet		Telnet is a user command and an underlying TCP/IP protocol for accessing remote computers.
PPP	Point-to-Point Protocol	PPP is a protocol for communication between two devices using a serial interface.
DHCP	Dynamic Host Configuration Protocol	DHCP is a standard protocol that automates the process of configuring network hosts by allowing hosts to obtain IP addresses and configuration parameters

1 About the NetBiter Serial Server

1.1 General

A serial server is a device that forwards data between a serial port and an Ethernet network. It can be used to connect your serial devices to a LAN or Internet without any hardware modifications. Together with a special software driver in a PC, it can be used as a remote serial port. PC applications designed to access devices on a normal serial port, can access the remote serial server without any software modifications. The LAN/Internet network together with the serial server and driver can be viewed as a long "virtual" serial cable.



The NetBiter Serial Server connects serial devices to Ethernet networks using the IP protocol family.
Some different types of serial devices supported are listed below:

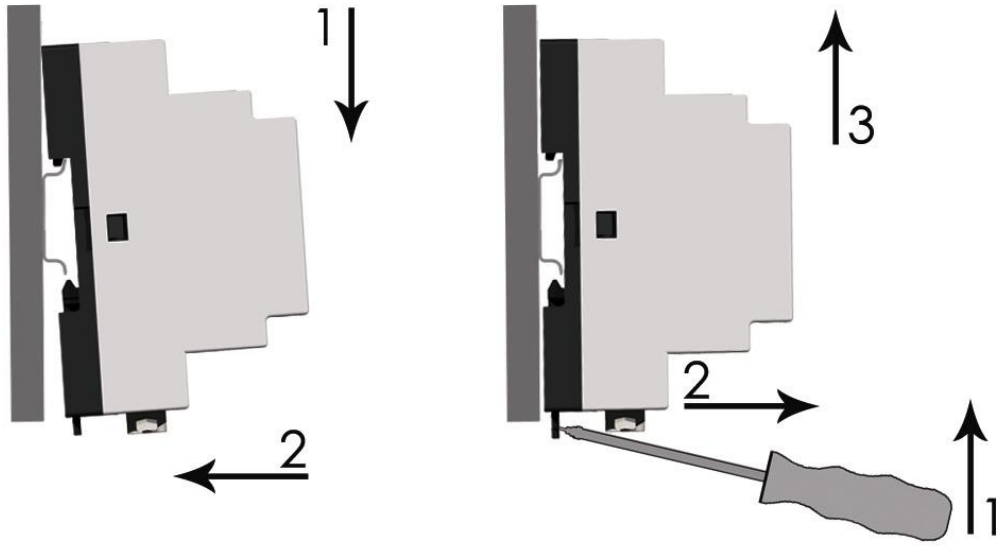
- Scanners
- Printers
- PLC's
- Data Collection Devices
- Telecommunications Equipment
- Data Display Devices
- Security Alarms and Access Control Devices
- Handheld Instruments
- Modems

The NetBiter Serial Server supports EIA-232 through a 9-pole DSUB connector and EIA-485 through a three pin connection (shield, A and B). It supports 10/100Mbps Ethernet through a standard Ethernet connector (RJ-45).
It can be configured via a web-interface or by using the NetBiter Config utility. It also contains a Flash memory for easy software updates.

1.2 Mounting

A – Snap on

B – Snap off



1 – Snap the NetBiter Serial Server on to the DIN-rail (as described on pictures above).

2 – Connect the Ethernet cable to the RJ45 connector.

3 – Connect the serial device to the 9-pole DSUB connector.

4 – Connect the Power Supply and apply power.

5 – Now you can start using the Serial Server. Use the "NetBiter Config Utility" to configure the IP address and other network settings. See section 2.1 for further information.

NOTE: The default IP address of the Serial Server is 10.200.1.X, where X is the last number of the MAC ID (Can be found on the label on the device, displayed in HEX format).

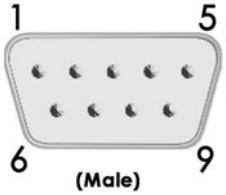
1.3 Connectors

1.3.1 Serial interface

The 9-pole DSUB, male connector on the NetBiter Serial Server contains a fully equipped EIA-232 interface. This port can be used to connect to any equipment with an EIA-232 interface. The NetBiter Serial Server is configured as a DTE device.

The following signals are available:

Pin number	Function
1	CD (Carrier Detect)
2	Rx (Receive)
3	Tx (Transmit)
4	DTR (DTE Ready)
5	GND
6	DSR (DCE Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)



Serial interface
(DSUB-9, EIA-232)

Ethernet interface
(RJ-45, 10/100Mbps)

1.3.2 Ethernet interface

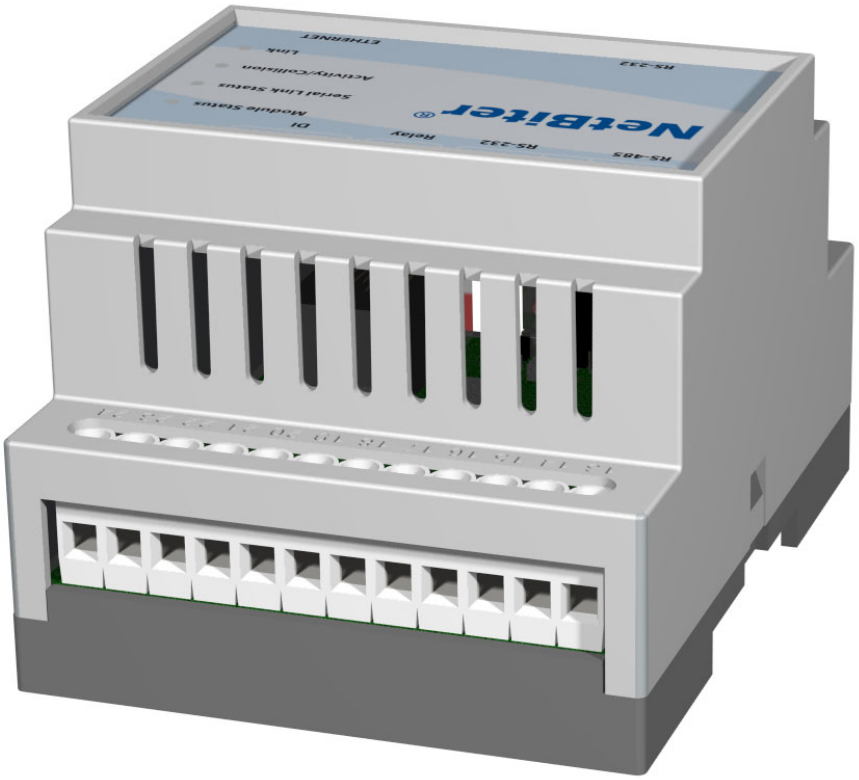
The Ethernet interface supports 10/100Mbps, using a standard RJ-45 connector.

1.3.3 Interface, RS-485

The 12-pole screw connector contains an RS-485 interface. This port can be used to connect to any equipment with an RS-485 interface.

1.3.4 Power supply connection

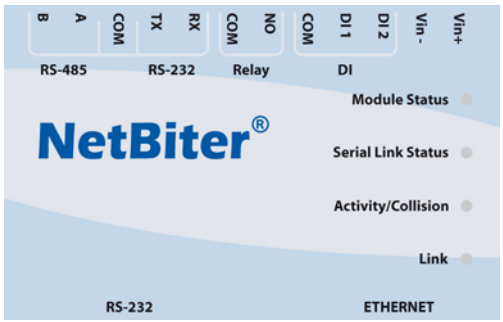
The NetBiter Serial Server can be powered by a 9-32VAC/DC supply
(Power requirement 1.7W).



Pin number	Function
24	Vin+
23	Vin- (Ground connection)
22	Digital In 1+ (10-24VDC)
21	Digital In 2+ (10-24VDC)
20	Digital Input common
19	NoConnect
18	NoConnect
17	RS-232 Receive (Not Used)
16	RS-232 Transmit (Not Used)
15	Common
14	RS-485 Line A
13	RS-485 Line B

The Serial Server will consume 70mA@24VDC (1.7W)

1.4 Indicators



LED functionality

Name	Colour	Function
Module Status	OFF	No power
	Green	Module is running in normal mode
	Orange	During boot-up
Serial Link Status	Flashing Green	Serial Packet receive (on either port)
	Flashing Red	Serial Packet transmit (on either port)
	Orange	During boot-up
LAN Activity	Flashing Green	Ethernet Packet received
	Flashing Red	Ethernet Collision detected
Link 10/100	OFF	No Ethernet Link detected
	Green	Ethernet network detected, 10Mbps
	Orange	Ethernet network detected, 100Mbps

2 Configuration

2.1 Configure the NetBiter Serial Server IP-address

2.1.1 About the NetBiter Config utility

The NetBiter Config utility is a PC-based configuration utility to set TCP/IP network settings in the NetBiter. This utility has the ability to scan the Ethernet network for connected NetBiter devices and let the user set IP-address, net mask, gateway, DNS and hostname for each unit.

2.1.2 Installation

System Requirements

- Pentium 133 MHz or higher
- 5 Mb of free space on the hard disk
- Win 95/98/ME/NT/2000/XP
- Network Interface Card (Ethernet)

Installation Procedure

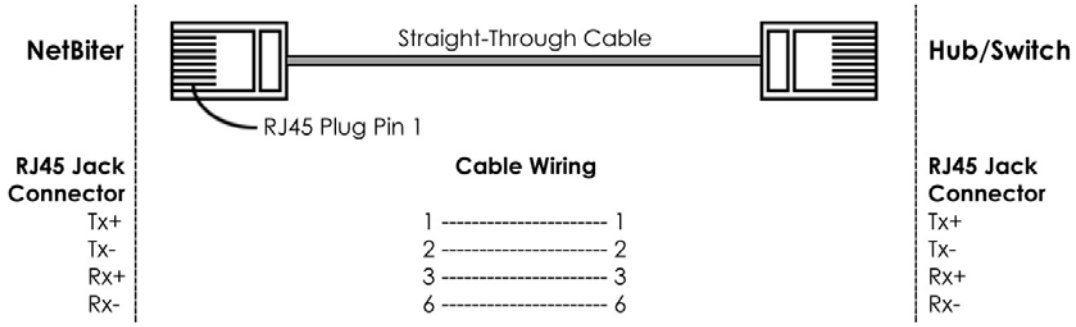
There are two methods to install the NetBiter Config utility, either downloading it from the IntelliCom website or use the installation CD ROM.

- Using the CD ROM: Run “Setup-NetBiterConfig.exe” and follow the onscreen instructions.
- From website: Download the self-extracting installation package “Setup-NetBiterConfig.exe” from http://www.intellicom.se/support and run it.

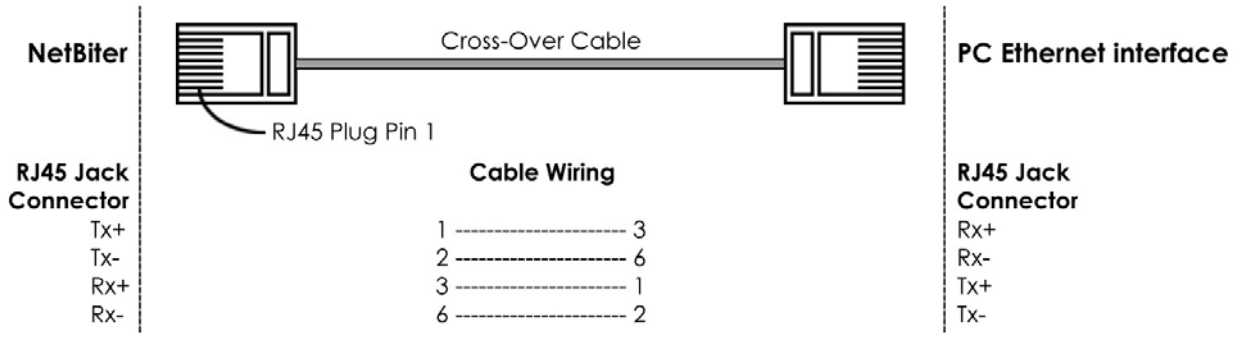
2.1.3 Scanning for connected devices

First ensure that you have connected the NetBiter units you want to install to the same Ethernet network as the PC is connected to. Use standard Ethernet cables, straight-through or cross-over cable depending on how you connect to the device. See pictures below for details.

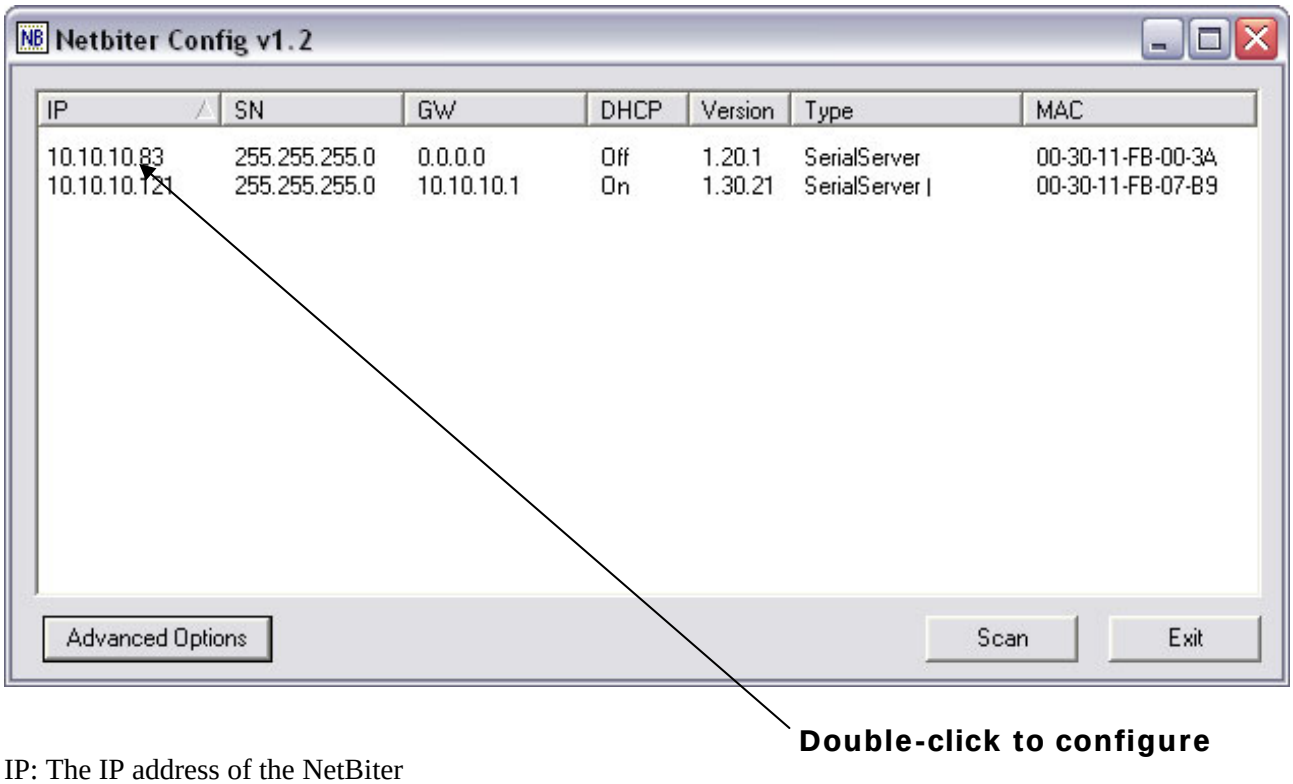
Connecting the NetBiter to a hub or Switch



Connecting the NetBiter directly to a PC



When the NetBiter Config utility is started, it will scan the Ethernet network for NetBiter devices. All detected devices will be presented in a list in the main window. If you want to force a new scan for devices, you can press the "Scan" button.



IP: The IP address of the NetBiter

SN: The subnet mask

GW: The default gateway

DHCP: Dynamically assigned IP address On/Off

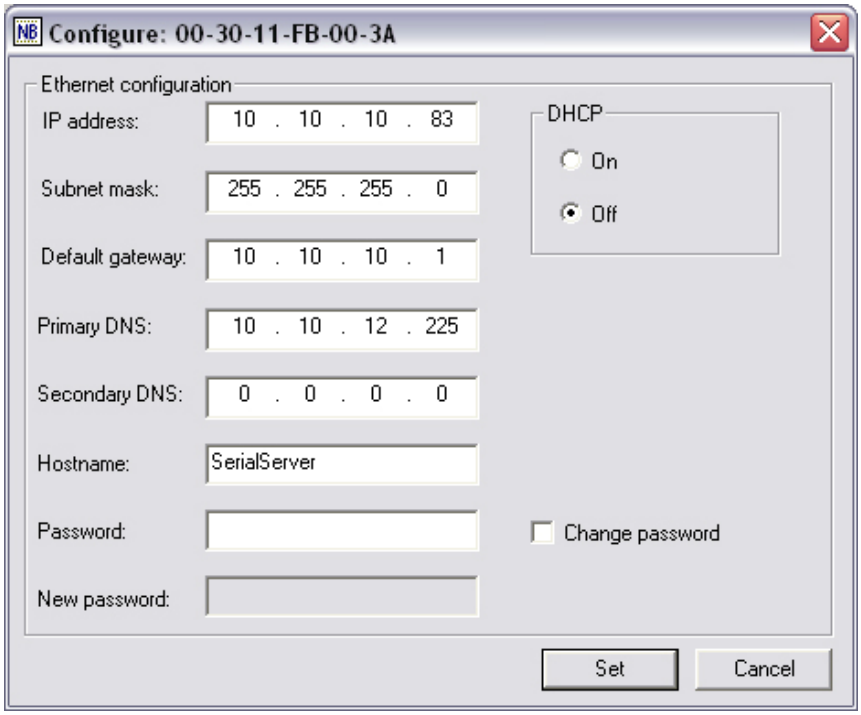
Version: The version of the application-software

Type: The product type

MAC: The Ethernet MAC address of the NetBiter

2.1.4 Changing IP settings

To change the IP settings on a detected device, double-click on the device you want to configure in the list of devices. This will open up a dialog where you can enter the desired IP configuration. To obtain the necessary information about IP address, subnet mask etc. please contact your network administrator.



NOTE! Do not select the DHCP option if you don't have a DHCP server available on the network.

Host Name: Here you can enter a hostname of your device.

IP Address: The NetBiter IP address.

Subnet mask: Mask network

Gateway: The default gateway in the network

Primary DNS: The primary Domain Name Server

Secondary DNS: The primary Secondary Name Server (if it exists)

The default password for authentication of the new settings is "**admin**".

Pressing "Set" will cause the NetBiter device to reboot and after that the new settings will be enabled.

You can test the new settings by opening a web-browser and enter the IP you just selected. If you selected DHCP and want to know what IP your device have been assigned, you can do a new scan with the NetBiter Config utility to view the new network configuration information.

2.2 Installing the Windows Driver (Serial/IP)

To be able to use the NetBiter Serial Server you need to install the Serial/IP driver on a PC. For installation instructions, see the "Serial/IP Quick Start" available at http://www.intellicom.se/support.

2.3 Configuring the Serial Server

2.3.1 Log in

Open a web browser (Internet Explorer for example) and enter the IP address you have set on the NetBiter unit with the NetBiter Config utility. For example, if you entered the address 10.10.10.83 then you should enter the text below in the address field of the browser and press enter:

http://10.10.10.83

Now you should see the login screen:

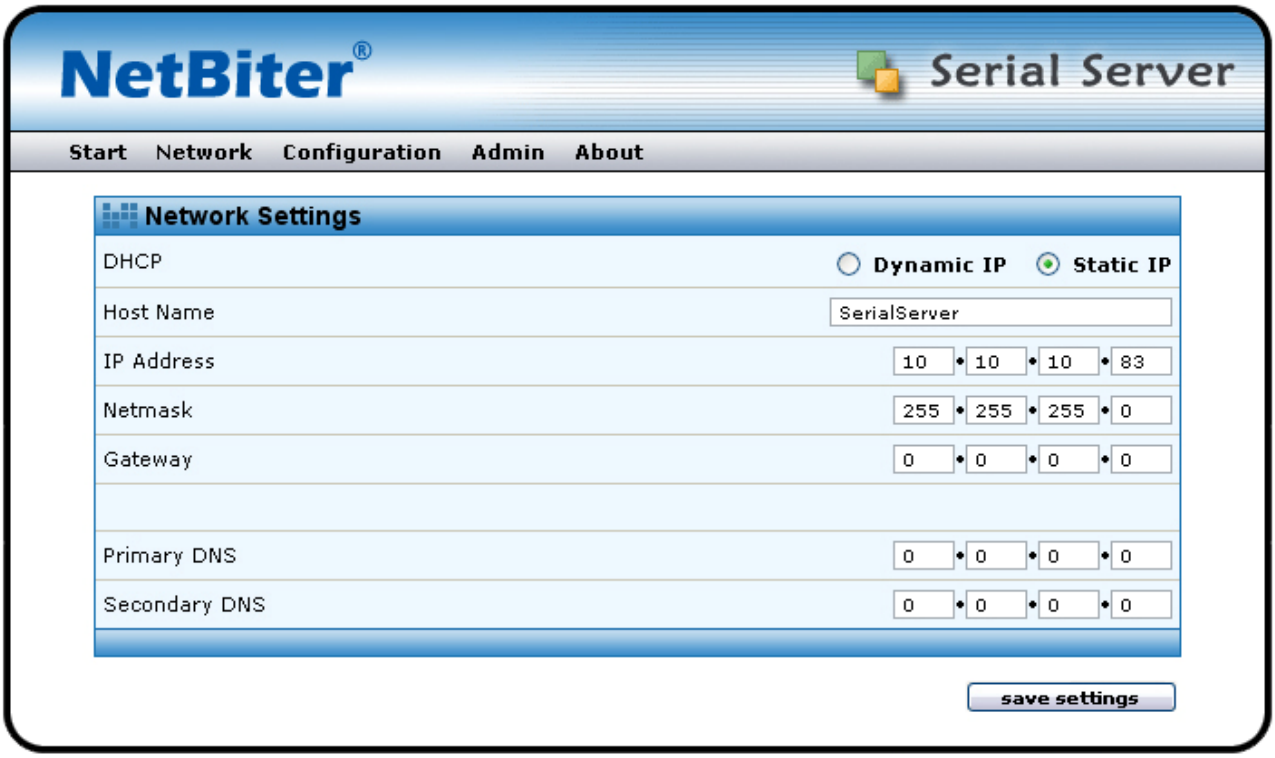
To be able to configure the serial server you should enter "admin" in the user-name box. The default password is "admin". You can later change the default password to something else. This will be described in the section "Admin" below.

If you have problems to log in and you are sure that your password is correct, make sure that Caps Lock is not enabled on your keyboard.

The welcome page.

2.3.2 Network settings

If you press the **Network** link you will be presented with the following view.



On this page you can view and change the TCP/IP network settings in the module. These settings are the same as the ones set by the NetBiter Config utility. To obtain the necessary information about IP address, Subnet mask etc. please contact your network administrator.

DHCP : Select this if you have a DHCP server on your network and you want the IP address be assigned automatically by the server.

NOTE! Do not select the DHCP option if you don't have a DHCP server available on the network.

Host Name: Here you can enter a hostname of your device.

IP Address: The IP address.

Netmask: The subnet mask

Gateway: The default gateway

Primary DNS: The primary Domain Name Server

Secondary DNS: The primary Secondary Name Server (if it exists)

Press "Save Settings" to update your configuration.

2.3.3 Serial Server Settings

If you press the **Configuration** link you will be presented with the following view.

The page is divided in two sections, one for each serial port. All fields exist for both ports except that the EIA-485 port has no flow control selection.

Server Port Number: Your serial server answers on incoming connections on this IP port number. The defaults are 2000 for EIA-232 port and 2001 for EIA-485 port. Use these numbers when you connect from the Serial/IP driver, telnet or other application that can connect to a socket port. For example, if you connect to IP port 2000 your communication will go through the EIA-232 serial port.

Modbus Mode: This is regarding fragmentation on received messages on the serial port. If **On**, it makes the low level serial driver to wait 3.5 characters (standard Modbus message break time) before it passes the received characters further. Then it may be sent in one TCP/IP packet to prevent fragmentation on the receive side. The 3.5 char time is calculated from the current baud rate. If **Off**, you can still select the time in milliseconds to wait in silence before the received characters is passed to the serial server application in the NetBiter. 0 disables this feature. If so, characters received in about 10 milliseconds will be sent in each TCP/IP packet. This may mean less delay for each received byte, but may mean more TCP/IP overhead and maybe fragmentation of the serial packet.

Manual Serial Settings: If you want to lock the settings on the serial port, check this box. This is useful for various reasons. For example, if you connect with some application that doesn't do the remote serial port setup. Normally your PC serial application does this through the Serial/IP driver when you connect to a Serial/IP driver Com port.

If you use a program that doesn't set up the remote serial port the default NetBiter settings are used. These are 9600 baud rate, 8 data bits, No parity, 1 stop bit.

The rest of the selections are only available if you have checked the Manual Serial Settings box.

Baudrate: Sets the communication rate on the serial port. Selectable are 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200.

Character Format: First field is how many bits are used for each character. You can set 7 or 8 data bits. Second field is for parity configuration. Choose between No, Even or Odd parity. The third field is for how many stop bits to use. There can be 1 or 2.

Flowcontrol: For the EIA-232 port you can select if you want flow control handled by the UART. If this is selected then transmit is automatically stopped/continued when serial buffer is full/available. You can choose between NONE, CTS/RTS and XON/XOFF. NONE disables UART flow control. If CTS/RTS is selected the two UARTs involved uses two dedicated wires in the serial cable to control flow. NetBiter uses RTS when it wants to transmit and gets CTS back when it is clear to send. Be sure to use a serial cable with these wires connected. If XON/XOFF is used the remote UART should send characters to signal its buffer state.

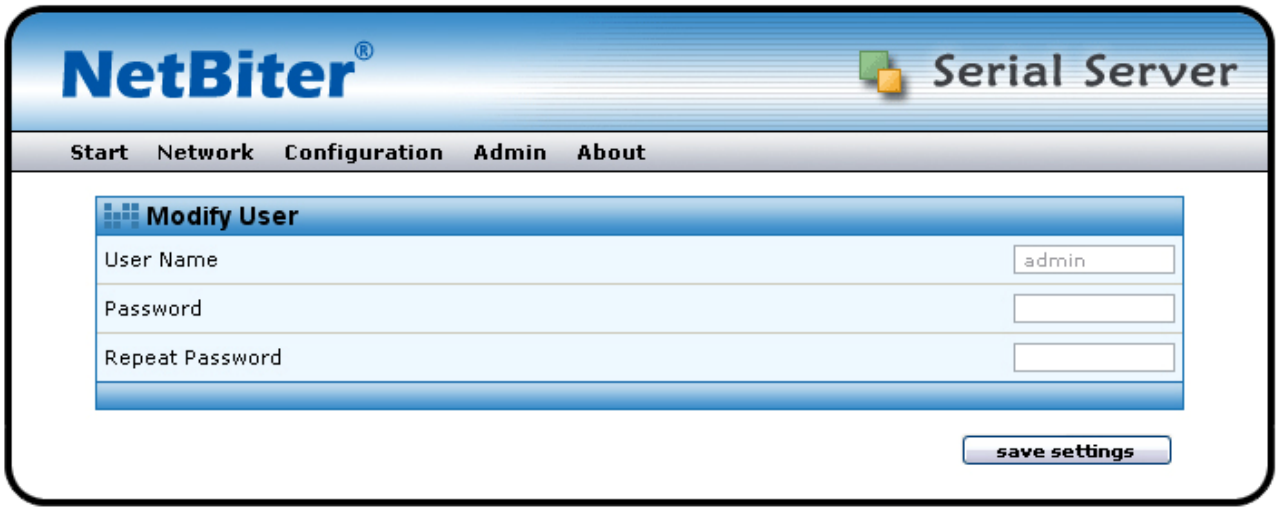
Modem control lines: If this option is set to on the modem control lines will be checked (DCD, DTR), if off the modem control line states will be ignored.

Press "**Save**" to update your configuration. You will be asked to press a reboot button in the next view. After about 20 seconds has passed you can press the start menu field up in the right corner to take you back to the start page.

NOTE! The Server Port Number must match the value entered in the Serial/IP Driver.

2.3.4 Password settings

If you press the Admin link you will be presented with the following view.



This screen allows you to change the administrator password for this device. Enter the new password in the Password box and in the Confirm Password box. Click "Save Password" to change the password.

2.3.5 About

This page shows some information which can be helpful when contacting IntelliCom Support!

NetBiter®
Serial Server
Start
Network
Configuration
Admin
About
Serial Server
Product Name: NetBiter® Serial Server
Revision: 1.20.1
Part number: 0130 9999 01
Mac-address: 00:30:11:FB:00:3A
The NetBiter product family is based on quality solutions from Sweden.
IntelliCom provides Remote Device Management solutions to network-enable, monitor and control automation devices from any suitable location. Our core business is within M2M (Machine 2 Machine), Ethernet / web solutions and Gateways.
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close

Product Name: Shows the product name of you NetBiter® Product.

Revision: Shows the software version of the Serial Server. Use this if you need to contact IntelliCom Support.

Part Number: Shows the part number of your NetBiter® Product.

Mac-address: Shows the mac-address of the Ethernet Interface on you NetBiter® Product.

APPENDIX A : SPECIFICATIONS

Ethernet connection

10Base-T or 100Base-TX (IEEE 802.3). RJ45 connector.

Serial interface

RS-232 with full modem control (RTS,CTS,DCD,DTR,DSR,RI)
300-115.200bps. 9-pole DSUB connector

RS-485 300-115.200bps. screw connector

Power Supply

9-32 VAC/DC (1.7W)

Temperature range

Operating :-40 - 85 °C
Storage : -40 - 85 °C

Humidity range

5-93% RH, non-condensing

Cover material

Grey plastic, LEXAN 940, self-extinguishing acc. to UL94-V0

Mounting option

Plastic housing: DIN rail (EN 50022)
Metal housing: Screw mounting (DIN rail optional)

CE certification

According to EN 50 081-2:1993 and EN 61000-6-2:1999